REMARKS

Applicant concurrently files herewith an Excess Claim Fee Payment Letter and fee for excess dependent claims.

Claims 1-30, are all the claims presently pending in the application. New claims 29-30 have been added to more completely define the invention.

It is noted that the claims have been amended solely to more particularly point out Applicant's invention for the Examiner, and not for distinguishing over the prior art, narrowing the claim in view of the prior art, or for statutory requirements directed to patentability.

It is further noted that, notwithstanding any claim amendments made herein, Applicant's intent is to encompass equivalents of all claim elements, even if amended herein or later during prosecution.

Claims 1, 7, 15, and 19 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Levine et al. (1995) (hereinafter "Levine").

Claims 26 and 27 stand rejected under 35 U.S.C. § 102(e) as being anticipated by Jahrling (U.S. Patent No. 6,161,814 A) (hereinafter "Jahrling").

Claims 2-6, 8-14, 16-18, and 20 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Levine et al. and Jahrling.

Claims 21-25 and 28 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Levine et al. and Van Marcke (U.S. Patent No. 6,215,116 B1) (hereinafter "Van Marcke").

These rejections are respectfully traversed in the following discussion.

I. THE CLAIMED INVENTION

Applicant's invention, as defined for example in a non-limiting embodiment of independent claim 1 (and substantially similarly by independent claims 8, 15, 21, 26, and 28) is directed to a presence detector including an optical emitter for emitting optical radiation, an optical detector for detecting a presence of an object based on receiving the optical radiation, and a microcontroller for controlling the optical emitter and processing the optical detector output, such that a range adjustment and range hysteresis based on the object are provided by

software in the microcontroller.

A feature of the present invention is an optical detector which determines the presence of an object when a first fraction of the emitted optical radiation is sensed, and which determines an object is no longer present when a second fraction of emitted optical radiation less than the first fraction is sensed.

With such features, a problem of on/off "chattering" when an operator is positioned at the edge of the detection range can be avoided.

The conventional systems, such as those discussed below and in the Related Art section of the present application, do not have such a structure, and fail to provide for such an operation (e.g., see page 3, lines 8-16; page 8, lines 7-18; and page 12, lines 1-10 of the present application).

Such features are not taught or suggested by any of the cited references.

II. THE PRIOR ART REFERENCES

A. The Levine Reference

The Examiner asserts:

> *[regarding claims 1-25 and 28] Levine et al. discloses a presence detector (Fig. 1) comprising an optical emitter 2 for emitting optical radiation, an optical detector 4 for detecting a presence of an object 3 based on receiving the optical radiation, and a microcontroller 1 for controlling the optical emitter 2 and processing the output of the optical detector 4. There is software in the micro controller 1. The software provides a range adjustment based on the object 3 (page 421) and the software provides range hysteresis based on the object 3 (page 420). The property (signal 6 being raised) that has been changed by an external agent (presence of object 3) does not return to its original value (signal 6 being lowered) when the cause of the change (object 3) is removed (from some non-zero time interval T) so range hysteresis is established.*

However, Applicant respectfully disagrees.

Firstly, as described in the specification, the sensor of Levine lacks range hysteresis resulting in on/off "chattering" when the operator is positioned at the edge of the detection range (e.g., see page 3, lines 1-16 of the specification.

For example, Levine discloses "*[i]f more than half of the N groups are detected, the program raises output control signal 6 to indicate the present presence of an operator 3*" (e.g., see page 420, first paragraph of Levine). Following detection of the presence of an operator "*[a]fter signal 6 is raised, the program runs as before, but not checks for the continued presence of this operator. In this mode, it will lower signal 6 only if detections cease for a predetermined number of pulse groups. This number corresponds to a time interval T*" (e.g., see page 420, second paragraph of Levine). Thus, in Levine, while detection of a number of groups indicates the presence of an operator, the non-detection of an operator is only based upon "*a time interval*".

Nowhere does Levine et al.disclose that the presence of an object is determined upon sensing of a first fraction of emitted optical radiation and the non-presence of an object is subsequently determined by sensing of a second fraction of the emitted optical radiation which is less than the first fraction. Thus, unlike the present invention, the problem of on/off "chattering" when the operator is positioned at the edge of the detection range would not necessarily be avoided.

Hence, turning to the clear language of independent claims 1 (and substantially similarly that of independent claims 8, 15, 21, 26, and 28), in Levine there is no teaching or suggestion of "*[a] presence detector, comprising:*

an optical emitter for emitting optical radiation;

an optical detector for detecting a presence of an object based on receiving said optical radiation; and

a microcontroller for controlling said optical emitter and processing said optical detector output, such that a range adjustment and range hysteresis based on said object are provided by software in said microcontroller,

wherein said optical detector determines the presence of an object when a first fraction of the emitted optical radiation is sensed, and

wherein said optical detector determines an object is no longer present when a second fraction of emitted optical radiation less than the first fraction is sensed" (emphasis

Applicant's).

For the reasons stated above, independent claim 1 (and substantially similarly independent claim 15) of the claimed invention is fully patentable over Levine.

Further, dependent claims 7 and 19 when taken in combination with claims 1 and 15 define additional novel limitations.

B. The Jahrling Reference

The Examiner asserts:

> *[regarding claims 26-27] Jarhling discloses infrared emitter-detector unit comprising a panel 56 comprising a surface, two apertures 60, 58 therein extending through the surface, and tow cavities 70, 68 each cavity extending to one of the two apertures, the between apertures being isolated from radiation communication from each other (column 5, lines 16-21).*

However, Applicant respectfully disagrees.

Firstly, Jarhling is for an electrical control system for operating a toilet flushing device and includes a detection system for detecting the presence of a user of a toilet device. Jarhling discloses that an object of his structure is *"altering the transmitted and reflected electromagnetic radiation to a desired angle relative to the initial transmitted beam"* (e.g., see column 1, lines 63-65 of Jarhling).

Jarhling is completely silent regarding detection of the presence of an object based upon a sensing of a first fraction of emitted optical radiation and determining the non-presence of an object by subsequently sensing a second fraction of the emitted optical radiation which is less than the first fraction.

Instead, in Jarhling there is only disclosed a system of parallel prisms for bending an infrared beam, a refracting transparent film to bend the transmitted and reflected beams through a desired angle, a refracting medium which may be active or passive, and a means for altering the direction of an infrared sensor beam which is focused or

non-focused. This is much different from the optical sensor of the present invention which uses a first and a second fraction to control an on/off condition of a display.

Hence, turning to the clear language of independent claim 26, there is no teaching or suggestion of "*[a]n infrared emitter-detector unit comprising:*

a panel comprising a surface, two apertures therein extending through said surface, and two cavities, each cavity extending to one of said two apertures, said two cavities being isolated from radiation communication from each other;

an infrared emitter disposed within a first one of said two cavities and operable to emit infrared radiation through a first one of said two apertures;

an infrared detector disposed within a second one of said two cavities and operable to receive infrared radiation through a second one of said two apertures; and

a pair of infrared-transparent covers each being disposed over one of said two apertures, said covers being separated to prevent transmission of infrared radiation therebetween,

wherein said infrared detector determines the presence of an object when a first fraction of the emitted infrared radiation is sensed, and

wherein said optical detector determines an object is no longer present when a second fraction of emitted infrared radiation less than the first fraction is sensed" (emphasis Applicant's).

For the reasons stated above, independent claim 26 of the claimed invention is fully patentable over Jahrling.

Further, dependent claim 27 when taken in combination with claim 26 defines additional novel and non-obvious limitations.

Further, with regard to the rejection of claims 2-6, 8-14, 16-18, and 20 under 35 U.S.C. § 103(a) as being unpatentable over Levine et al. and Jahrling, Jahrling, either alone or even (arguendo) if combined with Levine, does not teach or suggest "*said optical detector determines the presence of an object when a first fraction of the emitted optical radiation is sensed, and wherein said optical detector determines an object is no longer present when a second fraction of emitted optical radiation less than the first fraction is sensed*", as defined by independent claim 8 (and substantially similarly by independent claims 1 and 15 as discussed above). Thus, all of these claims, including

claims 2-6, 16-18, and 20 are also novel and non-obvious.

C. The Marcke Reference

The Examiner asserts:

> *[regarding claims 21-25 and 28] Levine et al. is operable to emit a second signal 6 upon no sensing a second fraction of the plurality of digital signals, notwithstanding that anything is larger than nothing. However, Van Marcke shows a decision block 316 (Fig. 6) in an infrared emitter 1-infrared receiver 3 operable to emit first and second signals upon sensing the appropriate fractions of emitted digital pulses reflected by an operator (see claim 9). In view of the effective performance in determining whether or not an object is in the target area, it would have been obvious to one of ordinary skill in the art to modify the infrared emitter-detector of Levine et al. to adjust the controller 1 to emit the second signal 6 upon sensing a second fraction of reflected digital pulses which is smaller than the first fraction.*

However, Applicant respectfully disagrees with the Examiner's assertions.

Firstly, as discussed above, Levine does not teach or suggest an infrared detector that determines the presence of an object when a first fraction of the emitted optical radiation is sensed, and that determines an object is no longer present when a second fraction of emitted optical radiation less than the first fraction.

Further, even if Van Marcke were to be combined with Levine (arguendo), there would still be no teaching or suggestion of the claimed invention. For example, Van Marcke discloses an infrared device for controlling faucets. As disclosed, the device of van Marcke detects motion or sudden changes in reflectivity, not a presence.

In particular, the system of van Marcke adapts to the presence of a stationary object of nearly arbitrary reflectivity by adjusting the power of a pulsed infrared emitter until the signal received at its detector is a nearly constant value.

The power adjustment has two advantages for that type of detector. First, it minimizes power consumption (e.g., the device is battery powered). Secondly, it allows

an amplifier to operate at high gain without overloading, in order to maintain high sensitivity to changes. This is appropriate to the intended use (e.g., the detection of hands under a faucet for a few seconds).

As the Examiner asserts, the power level adjustment of van Marcke makes use of two detection threshold levels. The controlling microprocessor adjusts the infrared pulses to maintain the signal level between these levels. The use of two thresholds is similar to a home thermostat, with the temperature cycling up and down between two limits.

However, a feature of the present invention is that a presence sensor, not a motion sensor, is used. This feature allows an operator to sit in front of a computer terminal for an extended time, with little or no motion. Even with some transverse motion, the reflected signal may not vary much if the operator has a uniformly colored shirt on. This is because the emitted infrared beam of the present invention is purposely kept narrow to avoid "noise" by picking up passersby. Thus, the sensor of van Marcke which is for detecting variations in the reflected infrared, is not adequate. The sensor of van Marcke, in contrast to that of the present invention, can allow the computer to turn off while the operator is present. For example, an object of van Marcke is to overcome a drawback where "*even when the sensor has been accurately adjusted, a stationary object such as for example a stack of dishes may cause false actuations*" (e.g., see column 1, lines 35-37 of van Marcke).

In the present invention, the infrared detector can accommodate people walking past the computer. That is, in the present invention extreme sensitivity to passerby motion is undesirable as it can cause the computer to turn on when not being used by an operator.

Thus, in a non-limiting exemplary embodiment, the present invention describes a narrow-beam infrared emitter operating at constant power, with a circuit which detects an operator by measuring the amplitude of the reflected radiation. In this case, the infrared power is increased slightly when an operator is detected to prevent the system from chattering on and off if the operator happens to be at a location where detection was just possible. This is quite different from van Marcke which includes extreme sensitivity to motion.

Hence, turning to the clear language of the claims, there is no teaching or suggestion of "*[a]* wherein said optical detector determines the presence of an object when a first fraction of the emitted optical radiation is sensed, and

wherein said optical detector determines an object is no longer present when a second fraction of emitted optical radiation less than the first fraction is sensed." (emphasis Applicant's).

For the reasons stated above, independent claim 21 (and substantially similarly independent claim 28) of the claimed invention are fully patentable over Levine and van Marcke, either alone or in combination.

Further, dependent claims 22-25, when taken in combination with claim 21, define additional novel limitations.

Therefore, these references either alone or in combination are much different from the present invention and fail to teach or suggest the claimed invention.

For the reasons stated above, the claimed invention is fully patentable over the cited references.

III. FORMAL MATTERS AND CONCLUSION

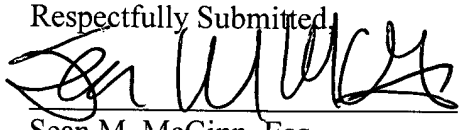
Regarding the Examiner's objections to the claims, Applicant submits that the amendments to the claims above fully address points 3-8 in the Office Action (e.g., see pages 2-3) raised by the Examiner.

In view of the foregoing, Applicant submits that claims 1-30, all the claims presently pending in the application, are patentably distinct over the prior art of record and are in condition for allowance. The Examiner is respectfully requested to pass the above application to issue at the earliest possible time.

Should the Examiner find the application to be other than in condition for allowance, the Examiner is requested to contact the undersigned at the local telephone number listed below to discuss any other changes deemed necessary in a telephonic or personal interview.

The Commissioner is hereby authorized to charge any deficiency in fees or to credit any overpayment in fees to Attorney's Deposit Account No. 50-0510.

Respectfully Submitted,



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